United States Department of the Interior

FISH AND WILDLIFE SERVICE
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January 2, 2019

To: Interested Parties

From: Scott Voss, Supervisory Fish Biologist, Red Bluff Fish and Wildlife Office

Subject: Biweekly report (December 17, 2018 - December 31, 2018)

Please find attached preliminary daily estimates of passage, 90% confidence intervals, and fork length ranges of unmarked juvenile salmonids sampled at Red Bluff Diversion Dam for the period December 17, 2018 through December 31, 2018. Race designation was assigned using length-at-date criteria.

This report also contains graphical displays of salmonid passage dating back to 2011 for comparison.

Please note that data contained in these reports is subject to revision as this data is preliminary and undergoing QA/QC procedures.

If you have any questions, please feel free to contact me at (530) 527-3043 ext 243.

Table 1.— Preliminary estimates of passage by brood-year (BY) and run for unmarked juvenile Chinook salmon and steelhead trout captured by rotary-screw traps at Red Bluff Diversion Dam (RK391), Sacramento River, CA, for the dates listed below. Results include estimated passage, peak river discharge volume, water temperature, turbidity, and fork length (mm) range in parentheses. A dash (-) indicates that sampling was not conducted on that date.

Date	Discharge volume (cfs) [1]	Water temperature (°C)	Water turbidity (NTU)	Estimated passage				
				BY18 Winter	BY18 Spring	BY18 Fall	BY18 Late-Fall	BY18 RBT
12/17/2018	33,780	10.7	–	–	–	–	–	–
12/18/2018	30,454	10.8	–	–	–	–	–	–
12/19/2018	8,015	11.5	15.1	1,450 (55 – 78)	419 (38 – 49)	9,633 (27 – 37)	0 (–)	0 (–)
12/20/2018	6,570	11.5	3.9	147 (53 – 68)	0 (–)	4,130 (26 – 38)	61 (116)	0 (–)
12/21/2018	6,634	11.5	4.1	27 (59)	0 (–)	4,181 (31 – 37)	0 (–)	0 (–)
12/22/2018	8,075	10.7	5.0	297 (55 – 82)	67 (39 – 44)	3,153 (29 – 38)	64 (121 – 130)	0 (–)
12/23/2018	6,380	10.3	3.9	118 (60 – 81)	58 (39 – 40)	8,213 (30 – 38)	88 (113 – 120)	0 (–)
12/24/2018	5,843	10.3	3.1	83 (67 – 82)	0 (–)	5,108 (31 – 39)	41 (139)	0 (–)
12/25/2018	22,937	9.4	–	–	–	–	–	–
12/26/2018	13,303	9.3	–	–	–	–	–	–
12/27/2018	7,974	9.2	4.6	1,965 (62 – 91)	161 (52)	61,202 (28 – 39)	337 (108 – 130)	0 (–)
12/28/2018	6,591	8.9	3.0	1,216 (61 – 104)	0 (–)	30,852 (28 – 39)	165 (115 – 130)	0 (–)
12/29/2018	5,973	8.9	3.3	1,576 (55 – 109)	134 (43 – 53)	30,440 (28 – 39)	512 (112 – 142)	28 (92)
12/30/2018	5,691	9.3	2.7	1,145 (57 – 110)	46 (51)	25,881 (29 – 40)	102 (117 – 127)	0 (–)
12/31/2018	5,560	9.3	2.4	1,433 (61 – 87)	0 (–)	38,658 (29 – 39)	687 (112 – 144)	0 (–)
Biweekly Total [2]				**12,745**	**1,216**	**297,222**	**2,757**	**37**
Biweekly Lower 90% Confidence Interval				7,343	283	194,532	1,213	-30
Biweekly Upper 90% Confidence Interval				18,147	2,149	399,912	4,301	105
Brood Year Total				**1,115,920**	**134,682**	**305,856**	**48,863**	**29,851**
Brood year Lower 90% Confidence Interval				784,491	83,451	199,018	19,680	12,511
Brood year Upper 90% Confidence Interval				1,447,349	185,912	412,695	78,046	47,191

[1] Peak daily discharge values do not account for diversions at RBDD and only represent peak flows registered at the Bend Bridge Gauging station (http://cdec2.water.ca.gov/cgi-progs/queryFx?bnd).

[2] Biweekly totals may be greater than the sum of the daily estimates presented in this table if sampling was not conducted on each day of the biweekly period. A dash (-) denotes those dates. To estimate daily passage for days that were not sampled, we impute missed sample days with the weekly mean value of days sampled within the week.

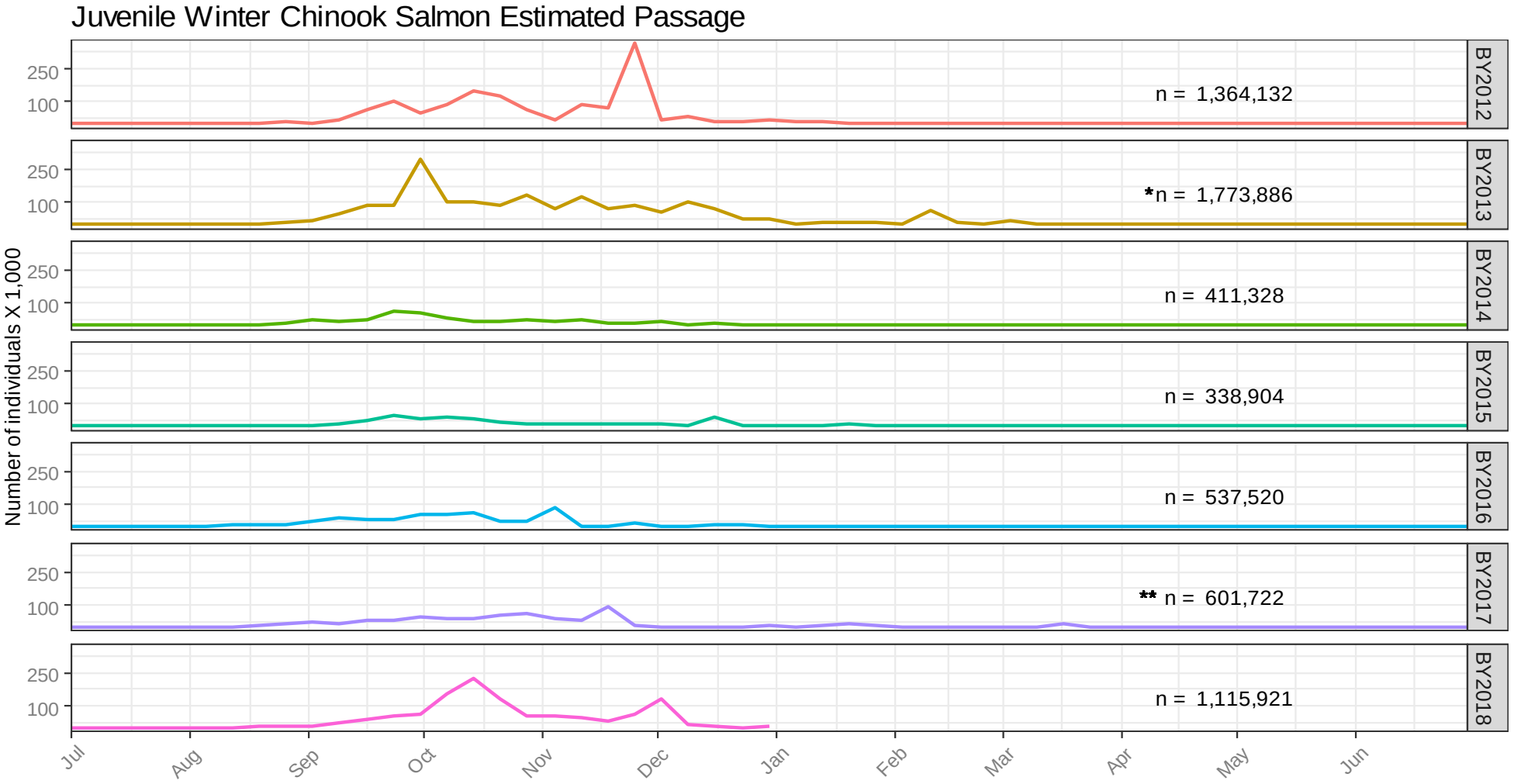

Figure 1. Weekly estimated passage of unmarked juvenile winter Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period July 1, 2012 to present .

*Winter Chinook passage value interpolated using a monthly mean for the period October 1, 2013 - October 17, 2013 due to government shutdown .

**Winter Chinook passage value reflects addition of 120,440 length-at-date spring Chinook determined to be winter Chinook from genetic analysis during the period of 10/16/2017 thru 11/18/2017 .

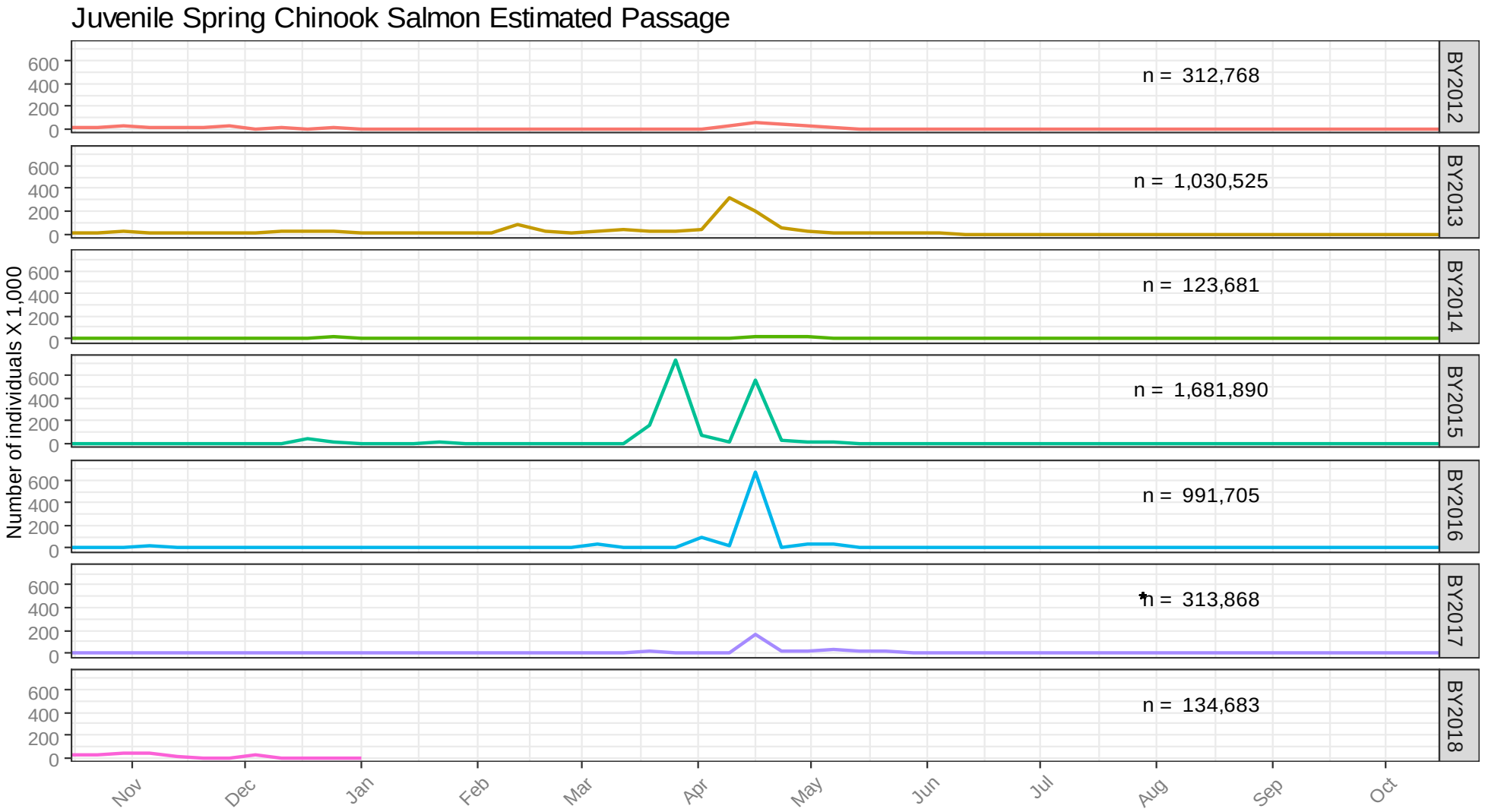

Figure 2. Weekly estimated passage of unmarked juvenile spring Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period October 16, 2012 to present .

*Spring Chinook passage value reflects subtraction of 120,440 length-at-date spring Chinook determined to be winter Chinook from genetic analysis during the period of 10/16/2017 thru 11/18/2017 .

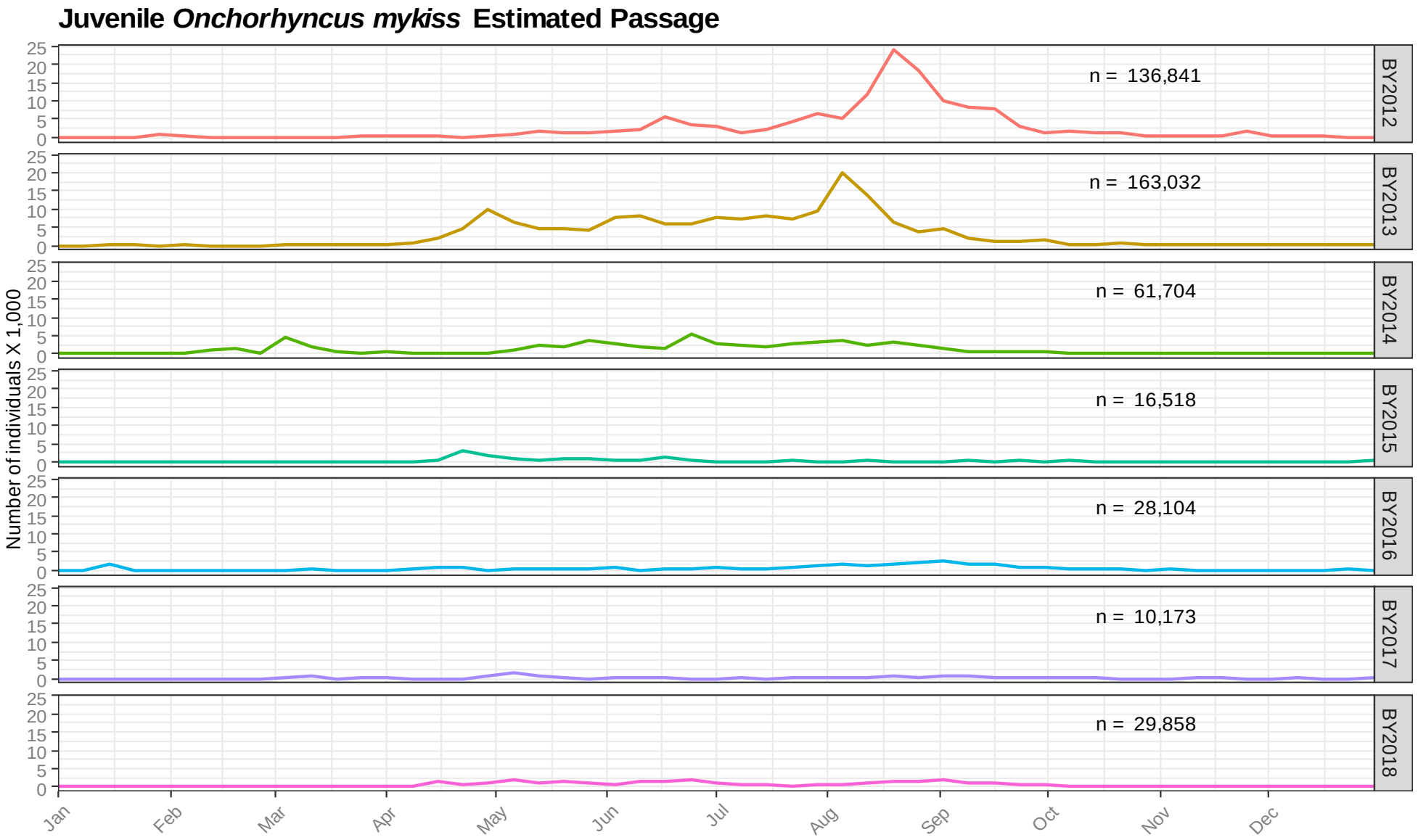

Figure 3. Weekly estimated passage of unmarked juvenile Rainbow/Steelhead trout at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period January 1, 2012 to present .

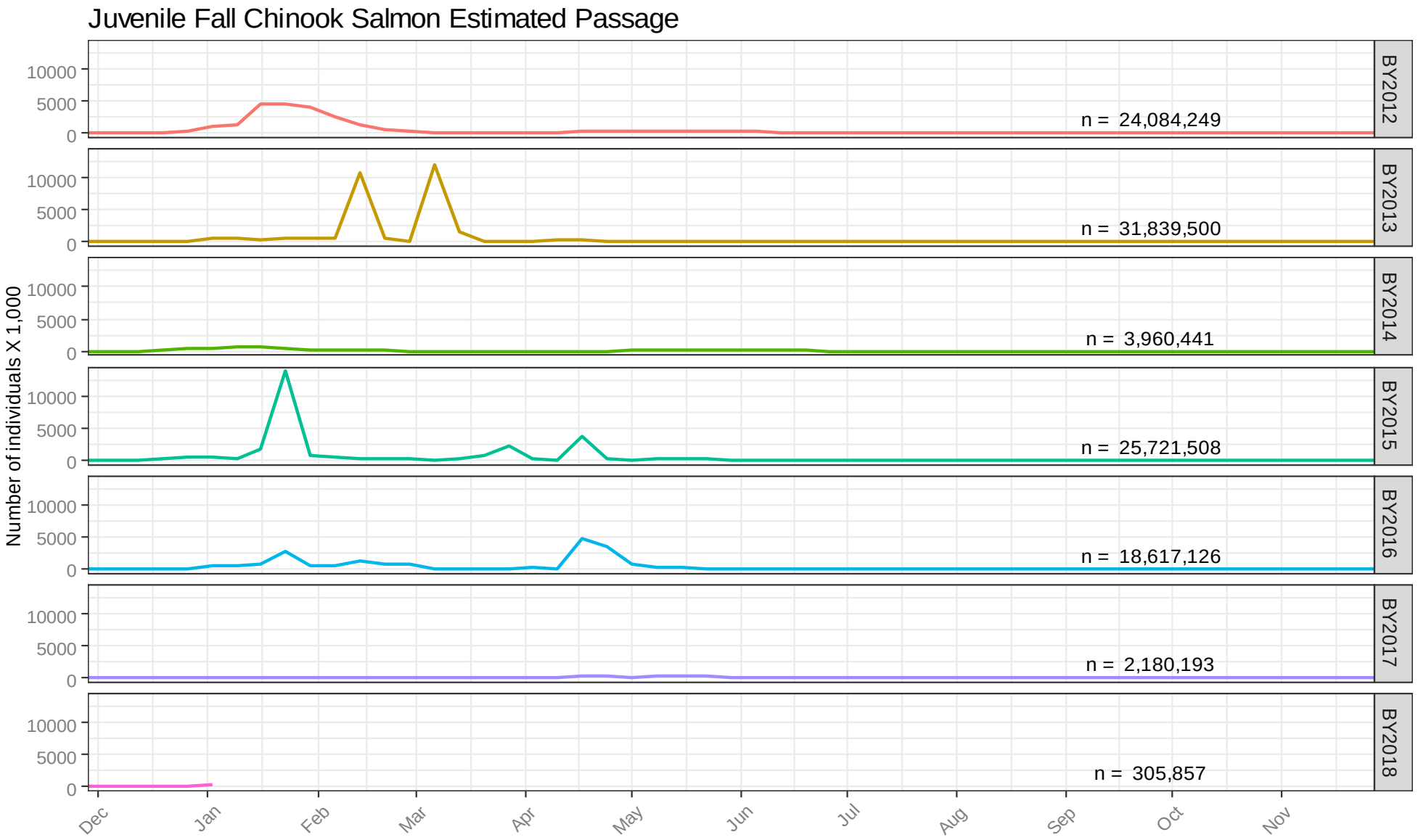

Figure 4. Weekly estimated passage of unmarked juvenile fall Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period December 1, 2012 to present .

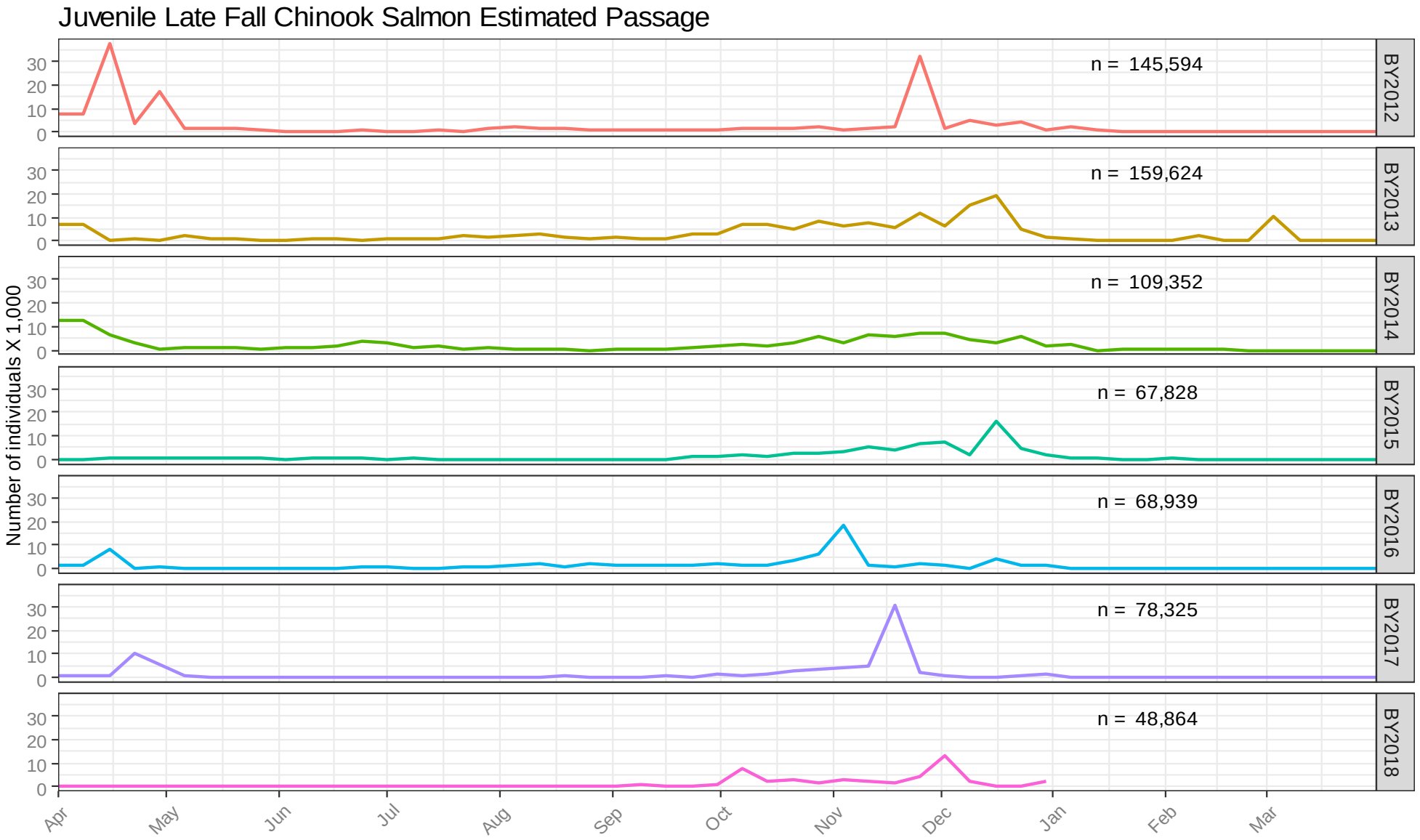

Figure 5. Weekly estimated passage of unmarked juvenile late fall Chinook salmon at Red Bluff Diversion Dam (RK391) by brood-year (BY). Fish were sampled using rotary-screw traps for the period April 1, 2012 to present .

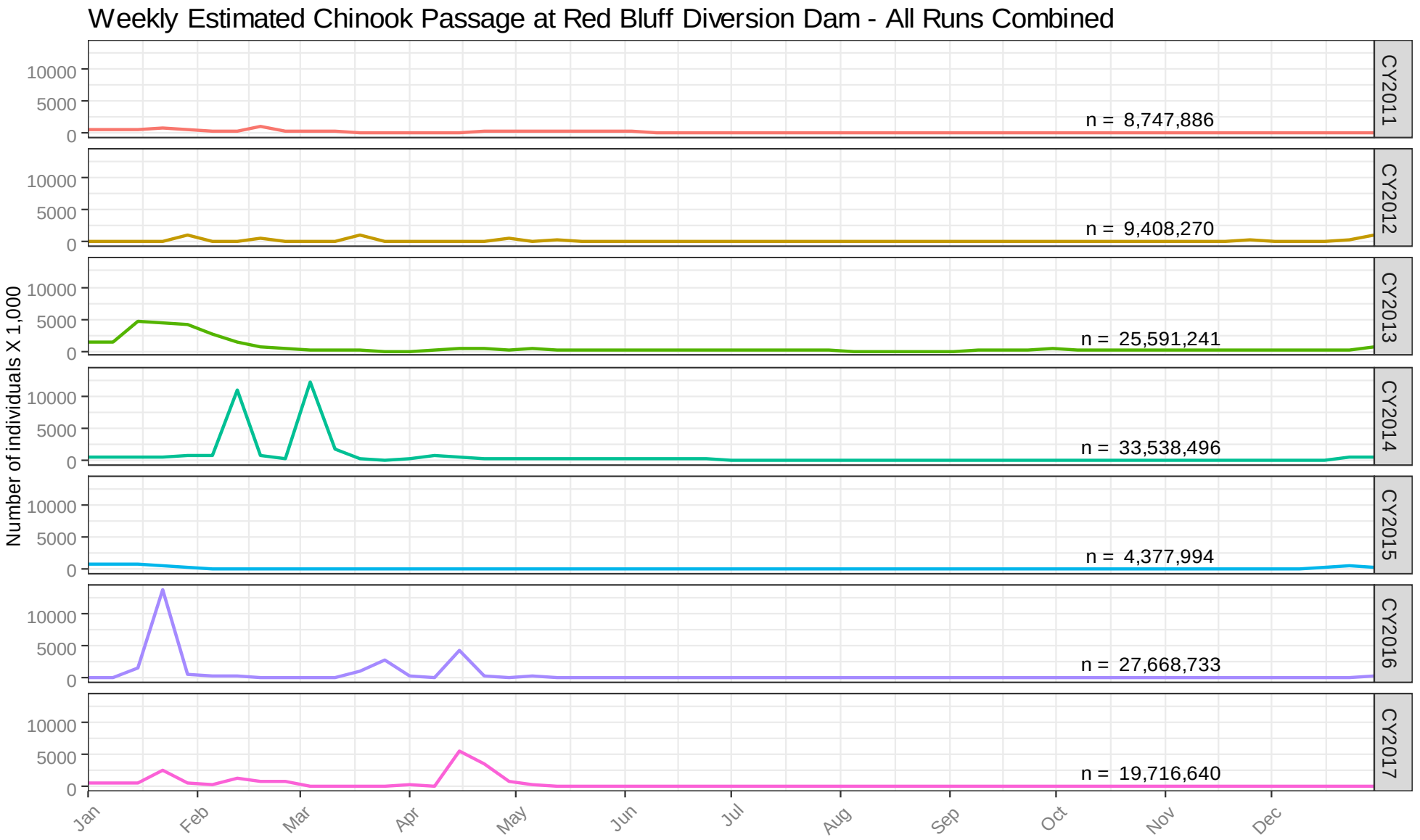

Figure 6. Weekly estimated passage of unmarked juvenile Chinook salmon at Red Bluff Diversion Dam (RK391) by calendar year. Fish were sampled using rotary-screw traps for the period January 1, 2011 to December 31, 2017